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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,570	06/08/2001	Chandrika Kamath	IL-10714	1692

7590 05/29/2003
Eddie E. Scott
Assistant Laboratory Counsel
Lawrence Livermore National Laboratory
P.O. Box 808, L-703
Livermore, CA 94551

EXAMINER

AMSBURY, WAYNE P

ART UNIT	PAPER NUMBER
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2171

DATE MAILED: 05/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/877,570

Applicant(s)

KAMATH ET AL.

Examiner

Wayne Amsbury

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

CLAIMS 1-36 ARE PENDING

1. Applicant is advised that should claim 4 be found allowable, claim 31 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

2. Claims 28-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear to what extracted features are intended to be "relevant".

In the interest of compact prosecution it is considered that any feature extracted by the claimed process is relevant to that process, and thus the term "relevant" has no patentable weight.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 10-17, 19-26 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Busche et al (Busche), US 6,430,547 B1, 06 August 2002 in light of Agrawal et al (Agrawal), US 6,230,151 B1, 08 May 2001.

As to **claim 19**, Busche is a data mining system, as evidenced by TITLE, ABSTRACT, and SUMMARY. The files of Busche include collected geological and remotely sensed samples [SUMMARY]. Objects such as data points, properties, and associated information are identified in the files digitally stored as representations of the samples [COL 1 lines 47-60].

Features such as chemical properties, location, and hidden relationships are extracted [SUMMARY] and patterns of relationships are determined. The features of the samples in Busche are relevant to a better understanding of the geology of a region [COL 1 lines 37-41].

Busche is clearly modularized [FIG 4], and teaches that much of the work in this area focuses on the use of parallel processing [COL 9 lines 42-44; COL 4 lines 50-53]. Busche recognizes a large variety of systems and data types, some plotted in two dimensions [COL 5 lines 64-65, some presented as three-dimensional [COL 6 lines 15-35; FIG 3], some as decision trees [COL 6 lines 60-65], some as text [throughout] including rules. Busche recognizes the use of object-oriented programming systems [COL 3 line 61 to COL 4 line 2].

Agrawal teaches the use of parallel classification for data mining in a multiprocessor system [TITLE; COL 2 lines 61-65, and elsewhere], teaches sorting in parallel [COL 4 lines 47-49], and the application of split tests to allocate processor shares [COL 4 lines 49-53].

As noted above, Busche recognizes the efficacy of parallel processing and the use of decision trees but Busche does not address details of the use of decision trees such as the use of a split test but Agrawal is directed to this particular mode of data mining. Agrawal does not explicitly address programming techniques such as object-oriented programming and modularity.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the parallel decision tree data mining of Agrawal with the object-oriented programming techniques of Busche because this would combine a decision-tree classifier that is fast, compact, and scalable on large data sets with the use of object-oriented technology for modularization and organization of large programs.

As to **claim 20**, Agrawal applies a variety of split tests [COL 4 line 47 and after], including splitting based on a numerical attribute [COL 4 line 65 and thereafter]. The Specification calls this a feature of "traditional decision trees" [page 17].

As to **claims 21-26**, the use of a Gini index, the CART-LC and the OC1 algorithms were well known at the time of the invention, as evidenced in the Specification at pages 14 and 18-20. As noted in the Specification on page 16, Quinlan suggested the use of the Information Gain Ratio as an improvement on Information Gain.

[As to **claim 24**, also see Agrawal COL 5 lines 6-8.] The Specification at page 20 [0053] teaches that evolutionary algorithms are well known.

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply well known splitting algorithms because this is more efficient than generating and debugging a new splitting rule.

The elements of **claims 1-8, 10-17, 28-35** are rejected in the analysis above and these claims are rejected on that basis.

4. **Claims 9, 18 and 27** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 36 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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The prior art of record fails to anticipate or teach the application of the twoing rule [Specification page 15] to parallel decision tree splitting in an object-oriented data mining paradigm.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne Amsbury whose telephone number is 703-305-3828. The examiner can normally be reached on M-TH 7-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9700.


WAYNE AMSBURY
PRIMARY PATENT EXAMINER

WPA
May 27, 2003